

# Running Deficits: Positives and Pitfalls

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## Summary

Governments run deficits for several reasons. By running short-run deficits, governments can avoid raising taxes during economic downturns, which helps households smooth consumption over time. Running deficits can stimulate aggregate demand in the economy, thus giving policymakers a valuable fiscal policy tool to help support macroeconomic stability. In particular, short-run deficits may help boost economic activity when monetary policy loses its potency. When interest rates fall during an economic downturn, banks can become reluctant to lend when perceived lending risks outweigh anticipated gains, while fewer firms and consumers demand new loans. In such a situation, known as a liquidity trap, a monetary authority such as the Federal Reserve can do little to expand the money supply. Thus, while the monetary authority can cut short-term interest rates to nearly zero—or even to zero—lower interest rates or other monetary policy initiatives may spur little new consumer spending or business investment. Non-traditional monetary policy, however, can play a key role in economic management. During a liquidity trap situation, fiscal policy tools such as increased government spending or tax cuts that increase deficits may be an important complement to monetary policy. So-called “fresh-water” economists have questioned the logic of these fiscal policies. So-called “salt-water” economists, who have sought to put Keynesian fiscal theories on a more modern foundation, contend that government interventions can mitigate economic downturns. Most professional economic forecasters find that deficits can stimulate economic activity when the economy runs below its potential.

In better economic times, deficits may crowd out private investment or worsen trade deficits. But long-run deficits may transfer economic resources from younger to older generations, allowing older generations to enjoy anticipated benefits of future economic growth—long-run deficits may also impose large burdens on future generations. Some have argued this allows politicians to act opportunistically by providing benefits to current constituents while leaving future generations, an unrepresented constituency, with substantial fiscal burdens.

Between 2007 and 2009, federal tax revenues fell by 18.0% and corporate tax revenues fell 62.7%. Government outlays rose during the recession due to “automatic stabilizer” programs such as unemployment insurance and income support programs; federal support provided to Fannie Mae, Freddie Mac, AIG, and other companies; and economic stimulus legislation such as the American Recovery and Reinvestment Act of 2009 (ARRA; H.R. 1, P.L. 111-5).

Anticipation of changes in partisan control of government can motivate deficits, as current policy makers may wish to restrict their successors’ options. Research on state and foreign governments suggests that balanced-budget rules force governments to adjust spending and taxes sharply during economic downturns. Budget enforcement legislation, such as the 1990 Budget Enforcement Act (P.L. 101-508), may have helped preserve budgetary compromises between parties, which may have contributed to a reduction in federal deficits.

Deficits can seriously harm national economies. In the short run, fiscal overstimulation leads to inflation. In the long term, deficits either reduce capital investment, which retards economic growth, or increase foreign borrowing, which swells the share of national income going abroad. Governments can spend more than they collect in revenues by printing money, which causes inflation, or by borrowing. In the long run, governments risk default and bankruptcy if they fail to repay borrowers, at least to the extent of stabilizing the ratio of government debt to gross domestic product. This report, updated with the assistance of Joseph McCormack, will be modified as events warrant.

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## Why Do Governments Run Deficits?

In the past half century, the federal government has run annual deficits in all but six years.<sup>1</sup> The FY2009 federal deficit swelled to \$1.414 trillion, or nearly 10% of gross domestic product (GDP), as the economic recession depressed federal revenues and as financial interventions and “automatic stabilizer” income support programs increased federal spending. The size of recent deficits has added to longstanding concerns regarding the federal government’s long-term fiscal condition. Nonetheless, deficit finance can serve as an important policy tool. This report discusses how deficit finance can help governments manage their economies and how large and persistent deficits can lead to severe economic problems.

Public finance theory suggests three reasons for deficit financing by government. First, governments can prevent sudden changes in taxes by borrowing. Second, debt finance gives governments a powerful macroeconomic policy tool. Third, debt finance can redistribute resources among generations.

Government borrowing can shift revenues and expenses into different time periods more easily or more cheaply than households, which allows governments to use deficits to make taxpayers better off by smoothing tax levels.<sup>2</sup> The federal government can spread the cost of major capital investments over many years by issuing debt in the form of bonds or Treasury bills. Deficit finance can spread an especially large cost such as a major war over several generations, or even centuries,<sup>3</sup> and enables governments to keep taxes steady during temporary economic downturns, thus smoothing consumption for households. Government debt that nears unsustainable levels, however, can inject turmoil into an economy, and governments may go bankrupt if they fail to repay what they borrow.<sup>4</sup>

Increased government spending financed by borrowing can stimulate economic activity, giving government a fiscal policy tool to counteract recessions. A countercyclical fiscal policy, in which taxes are cut or spending is increased, can dampen economic fluctuations and limit the depth of economic downturns. Pro-cyclical fiscal policy, in which taxes are raised or spending is cut during recessions, tends to amplify economic fluctuations. During economic downturns, government revenues fall and expenditures rise as more people become eligible for unemployment insurance and income support programs, causing deficits to increase or surpluses to shrink. These programs are known as “automatic stabilizers” because deficit spending then provides a countercyclical stimulus to economic activity in the short run without the need for new legislative action.<sup>5</sup>

Finally, deficit finance can transfer the benefits of future economic growth to current generations. Continuing real economic growth would allow future generations to experience higher standards of living than previous generations. Deficit finance provides a means of transferring some of those gains to current generations by shifting some costs onto future generations. If deficits are

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<sup>1</sup> The federal government ran surpluses in FY1960, FY1969, and FY1998-FY2001. Only in FY1960, FY1999, and FY2000 did the federal government run an on-budget surplus, which excludes off-budget surpluses that flow largely from Social Security payroll taxes net of beneficiary payments.

<sup>2</sup> So-called “rainy day” funds, used by many state governments, allow smoothing of tax levels without deficit finance.

<sup>3</sup> The British government still pays interest on consol bonds issued during the Napoleonic Wars.

<sup>4</sup> A more precise definition of fiscal sustainability is that the public debt does not grow without bound.

<sup>5</sup> The Congressional Budget Office (CBO) computes a measure of the deficit that adjusts for business cycle effects to allow a more meaningful comparison of short-term fiscal stance across different years.

large or if future economic growth is slow, then deficit finance could lead to a deterioration of living standards over time.

## Recent Federal Policy Responses

The federal government's response to the recent recession may reflect the aims discussed above. The government cut some taxes and increased spending to stimulate the economy, while issuing new debt at an accelerated pace. The American Recovery and Reinvestment Act of 2009 (ARRA; H.R. 1, P.L. 111-5) funded programs that are projected to provide \$814 billion to stimulate the economy with financial assistance, loans provided to financial firms, and increased government spending including aid given to states.<sup>6</sup> Certain Supplemental Nutrition Assistance Program (SNAP) benefits were cut by P.L. 111-226 (H.R. 1546), which is projected to reduce ARRA spending in future years.<sup>7</sup>

In 2008, tax cuts and income tax refunds under President Bush also provided economic stimulus and increased personal consumption expenditures. The Emergency Economic Stabilization Act of 2008 (EESA; P.L. 110-343), injected capital into key financial markets as part of the Troubled Assets Relief Program (TARP).<sup>8</sup> The "Cash for Clunkers" program (P.L. 111-47) was created to generate auto sales and improve fuel efficiency. Some argue that the program helped the automobile manufacturers General Motors and Chrysler remain viable concerns, encouraged greater sales of cars made in the United States, and prevented larger increases in unemployment.<sup>9</sup> ARRA extended a first-time home-buyer tax credit that provides up to an \$8,000 credit to first-time home buyers for sales occurring between January 1, 2009, and April 30, 2010.<sup>10</sup> While these programs stimulated home and auto sales, many suspect that they were more effective in shifting the timing of sales rather than affecting the overall volume of sales.<sup>11</sup>

<sup>6</sup> U.S. Congressional Budget Office, *Budget and Economic Outlook: An Update*, August 2010, Box 1-2, available at <http://www.cbo.gov/ftpdocs/117xx/doc11705/08-18-Update.pdf>. See also CRS Report RS21126, *Tax Cuts and Economic Stimulus: How Effective Are the Alternatives?*, by Jane G. Gravelle. ARRA (H.R. 1, P.L. 111-5) also raised the federal debt limit to \$12.1 trillion. The initial CBO estimate of ARRA on federal deficits was \$787 billion over the 2009-2019 period. January 2010 CBO estimates revised that to \$862 billion. U.S. Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2010 to 2020*, January 2010, available at <http://www.cbo.gov/ftpdocs/108xx/doc10871/01-26-Outlook.pdf>, p. 98

<sup>7</sup> For details, see CRS Report R41374, *Reducing SNAP (Food Stamp) Benefits Provided by the ARRA: P.L. 111-226 & S. 3307*, by Joe Richardson, Jim Monke, and Gene Falk; and CBO, "Budgetary Effects of Senate Amendment 4575," cost estimate, August 4, 2010, available at <http://www.cbo.gov/ftpdocs/117xx/doc11756/sa4575.pdf>.

<sup>8</sup> CRS Report R41001, *Redirecting Troubled Asset Relief Program (TARP) Funds to Other Uses*, by Marc Labonte, Edward V. Murphy, and Baird Webel.

<sup>9</sup> A reorganized General Motors emerged from bankruptcy on April 30, 2009; Chrysler filed for bankruptcy and on July 10, 2009, was sold to the Italian car maker Fiat. For details, see Micheline Maynard, "A Primer on the New General Motors," *New York Times*, July 10, 2009. Michael J. De La Merced and Micheline Maynard, "Fiat Deal With Chrysler Seals Swift 42-Day Overhaul," *New York Times*, June 11, 2009, p. B4.

<sup>10</sup> A first-time home buyer tax credit was included in the 2009 Recovery Act (P.L. 110-289, Sec. 3011[a]). ARRA extended this credit and relaxed some requirements. The credit was again extended by the Worker, Homeownership, and Business Assistance Act of 2009 (P.L. 111-92) to homes bought before May 1, 2010. For details, see CRS Report R40955, *An Economic Analysis of the Homebuyer Tax Credit*, by Mark P. Keightley. P.L. 111-198 allowed eligible buyers additional time to complete purchases. See CRS Report RL34664, *The First-Time Homebuyer Tax Credit*, by Carol A. Pettit.

<sup>11</sup> Mark Trumbull, "Extending home-buyer credit: another clunker?" *Christian Science Monitor*, October 29, 2009. This issue is discussed in more detail below.

## Is the Deficit the Right Measure of Fiscal Policy?

The federal deficit is an imperfect measure of the federal government's fiscal stance. While the total deficit indicates the federal government's current interaction with the U.S. economy, it does not reflect other aspects of the government's fiscal condition.<sup>12</sup> First, because the federal government is essentially run on a cash basis, the deficit does not fully reflect changes in future fiscal conditions of the government.<sup>13</sup> Second, some federal programs may create additional fiscal exposures that federal budget concepts may not fully reflect. The budgetary cost estimates of federal loan and loan guarantee programs omit risk adjustments, with the exception of programs funded by the Emergency Economic Stabilization Act (EESA) such as the Troubled Assets Relief Program (TARP).<sup>14</sup> Some contend that risk adjustments provide a more accurate description of the economic costs of federal credit programs. Other federal responses to financial turmoil may have created fiscal exposures that are harder to quantify. Recent federal interventions, to the extent that they convince private firms that the government will shoulder some costs of future adverse events through further public interventions, may expose taxpayers and federal program beneficiaries to other contingent costs that are difficult to quantify.

Bringing a federal budget to balance, temporarily, can occur beyond the straightforward measures of raising taxes or decreasing spending. Governments can increase current revenues by borrowing against future income, allowing a smaller deficit today at the expense of higher taxes or lower public program benefits. For example, Greece met certain European Union deficit and debt rules by selling rights to future airport fees and lottery income.<sup>15</sup> The City of Chicago in February 2009 sold the rights to parking fee revenues for the next 75 years for a \$1.15 billion lump-sum payment that mostly funded current municipal expenses.<sup>16</sup> Government asset sales and trades of future income streams for lump-sum payments can improve deficit figures reported on a cash-accounting basis, but may signal a deterioration of a government's overall fiscal condition.

Finally, deficits are residuals resulting from spending that exceeds revenues. While policymakers can control economic policy instruments such as taxes and spending, economic fluctuations affect the tax base.<sup>17</sup> For that reason, many economists rely on deficit measures that take business cycle effects into account.

<sup>12</sup> The total deficit combines on-budget deficits with off-budget surpluses stemming from the difference between Social Security payroll taxes and benefit payments.

<sup>13</sup> *The Financial Statement of the United States* has for many years included accrual accounting measures that reflect some changes in future federal costs. Those measures, however, do not include scheduled benefits for programs such as Social Security and Medicare, which some contend leads to underestimation of the fiscal overhang facing the federal government. For details, see CRS Report RL33623, *Long-Term Measures of Fiscal Imbalance*, by D. Andrew Austin; "Accrual Budgeting and Fiscal Policy," *OECD Journal on Budgeting*, vol. 2009/1, pp. 1-29.

<sup>14</sup> Section 123 of EESA requires that TARP costs be estimated as specified by the Federal Credit Reform Act of 1990 (P.L. 101-508, amended by P.L. 105-33) and that estimates incorporate risk adjustments. Cost estimates for other federal loan and loan guarantee programs omit risk adjustments.

<sup>15</sup> Louise Story, Landon Thomas Jr., and Nelson D. Schwartz, "Wall St. Helped to Mask Debt Fueling Europe's Crisis," *New York Times*, February 14, 2010, p. A1.

<sup>16</sup> Dan Mihalopoulos, "Company Piles Up Profits From City's Parking Meter Deal," *New York Times*, November 20, 2009, p. A29A.

<sup>17</sup> Also see CRS Report RL31235, *The Economics of the Federal Budget Deficit*, by Brian W. Cashell.

## Benefits and Costs of Using Deficits to Smooth Consumption

Helping households smooth income, according to standard public finance theory, may justify short-run deficits. If governments were required to balance their budgets in each fiscal year, so that current spending were constrained by available cash reserves and incoming revenues, then negative economic shocks would require spending cuts or tax increases. Public spending tends to rise during recessions due to the effect of automatic stabilizers, while revenues fall. Thus, such strict balanced-budget requirements would force governments to run a pro-cyclical fiscal policy, which could either strain household budgets via tax increases or force painful cuts in public programs. Governments can also smooth income by maintaining “rainy day” funds or sinking funds.

Economists have studied balanced-budget requirements in state governments, as well as budgetary restrictions used by other national governments.<sup>18</sup> All states except Vermont have balanced-budget requirements, though the strictness of those requirements varies. Many studies have found that the strictness of the balanced-budget requirement affects fiscal performance. Inman and Bohn found that tight balanced-budget rules cause states to reduce deficits by cutting spending, whereas softer constraints have little short-term effect.<sup>19</sup> Other researchers found that balanced-budget rules force governments to adjust spending and taxes sharply during economic downturns.<sup>20</sup> Fiscal crises may put strains on states and their citizens, but may also force policy makers to face tough fiscal decisions that would otherwise be avoided. Balanced-budget rules also appear to hold down taxes and spending, at least in the short run. Over the longer term, both spending and taxes adjust, although state and local governments with tight budget-balance measures appear to spend less per capita than those with less stringent requirements.

State budget-balance rules may also complicate broader macroeconomic stabilization efforts. One study found that reductions in state spending in 2008-2009 essentially offset federal stimulus spending.<sup>21</sup> Thus, according to that analysis, while federal spending prevented a steeper decline in economic activity, it did little to counteract a fall in private sector demand.

## Does Economic Stimulus Generate New Spending or Just Shift Spending?

Deficit finance aimed at helping households smooth consumption will generate few gains if households can smooth consumption on their own. For example, economist Robert Barro argued that deficit spending caused by tax cuts has no fiscal effect because households save in anticipation of future tax increases, offsetting any short-term stimulative effects. This concept is

<sup>18</sup> For a review of research using U.S. state data, see James M. Poterba, “Budget Institutions and Fiscal Policy in the U.S. States,” *American Economic Review*, vol. 86, no. 2 (1986), pp. 395-400. For a review of European budgetary rules, see Giancarlo Corsetti and Nouriel Roubini, “European versus American Perspectives on Balanced-Budget Rules,” *American Economic Review*, vol. 86, no. 2 (1986), pp. 408-413.

<sup>19</sup> Henning Bohn and Robert P. Inman, “Balanced Budget Rules and Public Deficits: Evidence From the U.S. States,” NBER Working Paper No. 5533, April 1996.

<sup>20</sup> James M. Poterba, “State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics,” *Journal of Political Economy*, vol. 102, no. 4 (August 1994), pp. 799-821.

<sup>21</sup> Joshua Aizenman and Gurnain Kaur Pasricha, “On the Ease of Overstating the Fiscal Stimulus in the U.S., 2008-9” NBER Working Paper No. 15784, February 2010, available at <http://www.nber.org/papers/w15784.pdf>.



known as Ricardian equivalence.<sup>22</sup> The theory of Ricardian equivalence implies that only the net present value of government expenditures and taxes needed to pay for them matter, but that the timing of taxes does not.<sup>23</sup>

Empirical research has failed to find evidence of Ricardian equivalence in its pure form, but some research has identified some Ricardian effects in savings behavior.<sup>24</sup> Even if a large proportion of households face liquidity constraints that limit their ability to smooth out income fluctuations by borrowing and saving, however, many high-net-worth households are well equipped to shift buying power across time in response to government policies.

The overwhelming evidence of economic research and macroeconomic experience, contrary to the predictions of Ricardian equivalence, suggests that deficit spending creates a short-term fiscal stimulus.<sup>25</sup> Despite the imprint that New Classical Macroeconomics, of which Ricardian equivalence is a central tenet, has left on macroeconomic modeling, most empirical economists believe deficits affect prices and output in the short run and recognize the usefulness of fiscal policy as a tool for macroeconomic management, at least in some circumstances. Even if Ricardian equivalence fails to hold in a pure form, it may help explain why economic stimulus measures may have limited effect when households can shift purchases backwards or forwards in time. The effects can also vary with the instrument used. For example, many contend that the Cash for Clunkers program (P.L. 111-47) and the First-Time Homebuyers' Tax Credit may have encouraged households planning to buy either cars or homes in the medium term to shift purchases forward in time, rather than stimulating new purchases by households that had no plans to buy.

## New Dimensions of Federal Economic Policy?

Economists typically view fiscal policy and monetary policy as the basic tools of macroeconomic management. Congress, in conjunction with the President, controls fiscal policy by making taxing and spending decisions, while the Federal Reserve sets monetary policy, using tools such as reserve requirements, and open-market trading of Treasury securities to affect key short-term interest rates. Responses to the financial crisis in late 2007 and 2008, however, included policies that do not fit squarely into the normal framework of fiscal and monetary policy. Some economists have referred to these initiatives as “credit policy” tools.<sup>26</sup> Many have argued that credit policy has developed because monetary and fiscal policy tools are ill-suited to deal with

<sup>22</sup> This concept is named after David Ricardo (1772-1823), a London financier and economist engaged in debates about the management of debts accumulated during the Napoleonic Wars. Ricardo, while providing examples pointing out that the real burden of a stream of interest payments was essentially the same as the burden of immediate payment of borrowing associated with those payments, was concerned that the opportunity to carry public debt could encourage “profligacy” in government expenditure. David Ricardo, *The Principles of Political Economy and Taxation*, 3<sup>rd</sup> ed., (London: Murray, 1821), ch. 17.

<sup>23</sup> Robert J. Barro, “Are Government Bonds Net Wealth?” *Journal of Political Economy*, vol. 82, no. 6. (November-December, 1974), pp. 1095-1117. Robert Barro assumes that public spending is fixed and any decrease in taxes on consumers only induces households to save more to prepare for future tax increases.

<sup>24</sup> M. Gabriella Briotti, “Economic Reactions to Public Finance Consolidation: A Survey of the Literature,” European Central Bank Occasional Paper no. 38, October 2005.

<sup>25</sup> Alan J. Auerbach and William G. Gale, “Activist Fiscal Policy to Stabilize Economic Activity,” working paper, September 29, 2009, available at <http://elsa.berkeley.edu/~auerbach/activistfiscal.pdf>; Robert E. Hall, “By How Much Does GDP Rise If the Government Buys More Output?” *Brookings Papers on Economic Activity*, Fall 2009, pp. 183-249.

<sup>26</sup> Marvin Goodfriend, Carnegie Mellon University and National Bureau of Economic Research, “We Need an ‘Accord’ for Federal Reserve Credit Policy,” *Shadow Open Market Committee Cato Institute*, April 28, 2008.



severe liquidity problems that may emerge due to credit quality issues.<sup>27</sup> Other economists note that over the longer term, financial regulation and consumer credit protection policies may also have important macroeconomic implications.

To avert a wider panic, the Federal Reserve set up facilities that loan funds to a broad assortment of private companies using a wide range of assets as collateral for longer terms, leading to a dramatic expansion of the Federal Reserve's balance sheet. In addition, in 2008, the federal government took on risky assets as part of financial interventions involving the Treasury Department and the Federal Reserve. In March 2008, as part of the arranged sale of the collapsing investment bank Bear Stearns to JP Morgan Chase, the federal government agreed to absorb certain Bear Stearns assets into the Maiden Lane I special purpose vehicle.<sup>28</sup> The federal takeover of mortgage giants Fannie Mae and Freddie Mac in September 2008 also required substantial government resources. The federal bailout of the insurer AIG resulted in the creation of the Maiden Lane II and III vehicles. Treasury officials have contended that supporting AIG avoided the collapse of other major financial firms and helped stabilize credit markets.<sup>29</sup>

New Federal Reserve loan facilities that provide liquidity to financial markets could expose the federal government to more risk than traditional monetary policy mechanisms. Medium-term collateralized lending through Fed liquidity facilities can provide economic relief to cash-constrained, yet solvent, companies. Federal Reserve facilities generally impose a "haircut" on loans, which depends on the type of collateral. For example, an asset with a par value of \$100 might be assessed a 15% haircut, so that a borrowing firm could obtain an \$85 loan. While the Federal Reserve is mandated to avoid credit risks and has implemented conservative loan collateral requirements, a severe financial disruption could impose costs on the Federal Reserve. For instance, if assets posted as collateral dropped sharply in value, the Federal Reserve could suffer losses. While the Federal Reserve is not part of the federal budget, net earnings of the Federal Reserve are transferred to the U.S. Treasury Department; capital losses on the Federal Reserve's balance sheet might also be transmitted to the federal government. Federal Reserve system earnings transferred to the U.S. Treasury, according to OMB estimates, are expected to reach \$77 billion in FY2010.

## Macroeconomic Demand Management: Theory and Policy

Keynesian economic theories, which call for governments to engage in active demand management through fiscal policy, had enormous influence in post-World War II economic policy. Governments, according to Keynesian theories, can influence economic activity through policies that affect investment and savings (IS) and liquidity and the money supply (LM).<sup>30</sup> Fiscal policy can influence investment and savings through government consumption and taxation. Monetary policy can affect the money supply and short-term interest rates, which can encourage investment. The IS-LM model, which describes the effects of fiscal and monetary policies,

<sup>27</sup> Claudio Borio and Haibin Zhu, "Capital Regulation, Risk-Taking and Monetary Policy; A Missing Link In The Transmission Mechanism?" *BIS Working Papers*, December 2008.

<sup>28</sup> The New York Federal Reserve Bank's back door opens onto Maiden Lane in lower Manhattan, which had been a social venue popular with 19<sup>th</sup> century seafarers.

<sup>29</sup> U.S. Department of Treasury, "Remarks by Secretary Henry M. Paulson, Jr. on Financial Rescue Package and Economic Update," press release, November 12, 2008, <http://www.ustreas.gov/>.

<sup>30</sup> The IS-LM interpretation of John Maynard Keynes's economic theories was developed by John Hicks. See John R. Hicks, "Mr. Keynes and the 'Classics': A Suggested Interpretation," *Econometrica* 5 (1937), pp. 147-59.

remains a widely used applied macroeconomics policy tool, even as academic research has focused on more mathematically sophisticated modeling approaches.

When interest rates fall to low levels during an economic downturn, banks can become reluctant to lend when perceived lending risks outweigh anticipated gains, while fewer firms and consumers demand new loans. In such a situation, known as a liquidity trap, a monetary authority such as the Federal Reserve can do little to expand the money supply. Thus, while the monetary authority can cut short-term interest rates to nearly zero—or even to zero—lower interest rates or other monetary policy initiatives may do little to encourage new consumer spending or business investment. Some monetary policy rules of thumb might in a severe recession indicate that short-term nominal interest rates should be negative. But a monetary authority cannot induce negative nominal interest rates because firms and households guarantee themselves a zero nominal return by simply holding cash.<sup>31</sup> When a central bank faces a zero lower bound (ZLB) on interest rates, fiscal policy tools such as increased government spending or tax cuts, which increase deficits, may be a necessary complement to monetary policy.<sup>32</sup> Some recent research suggests that fiscal stimulus is more effective when the zero lower bound applies.<sup>33</sup>

In better economic times, government spending becomes a less effective means of stimulating economic activity and can elbow out private consumption and investment or worsen trade deficits. When the economy is not below its potential, fiscal policy expansions are likely to lead to higher inflation or a displacement of private consumption and investment. When fiscal policy becomes less effective, though, monetary policy can be more effective in either encouraging or restraining economic activity.

In the 1970s, Keynesian theories began to face intense intellectual challenges.<sup>34</sup> The modern debate over Keynesian demand management and fiscal policy eventually precipitated into a division between the so-called “salt-water” and “fresh-water” schools of thought. Salt-water macroeconomics is often associated with the coast-proximate departments of economics at Berkeley, Harvard, MIT, UCLA, and Yale, while fresh-water macroeconomics is often associated with the lake-proximate Universities of Chicago, Minnesota, and Rochester.<sup>35</sup> These differences in views about the proper role of macroeconomic policy have become more prominent during the recent economic recession.

<sup>31</sup> The Taylor rule relates a short-term interest rate target to current inflation, a target inflation rate, and the level of economic slack in the economy, measured by the gap between actual and potential GDP. See John B. Taylor, “Discretion versus Policy Rules in Practice,” *Carnegie-Rochester Conference Series on Public Policy*, vol. 39 (1993), pp. 195-215.

<sup>32</sup> Managing monetary policy can become more challenging when a central bank faces the ZLB. When economic activity becomes so weak that the price level falls, causing deflation, then those who hold cash enjoy a positive real rate of return, which the real value of debts increases. Consumers who expect deflation to continue may wish to delay purchases, further reducing aggregate demand. A central bank may seek to reverse those deflationary expectations by committing to policies that would help increase the price level. The credibility of a central bank may play an important role in the success of such policies.

<sup>33</sup> For details, see Lawrence Christiano, Martin Eichenbaum, and Sergio Rebelo, “When is the Government Spending Multiplier Large?” paper presented at the Allied Social Sciences Association meetings, January 4, 2010; Alan J. Auerbach, William G. Gale, and Benjamin H. Harris, “Activist Fiscal Policy,” working paper, University of California–Berkeley, August 2010, available at <http://www.econ.berkeley.edu/~auerbach/activistfiscalspolicyaug10.pdf>. Tax cuts, depending on whether they are aimed at increasing consumption or stimulating business investments that could lower prices, might have contractionary effects, according to one researcher. See Gauthi B. Eggertsson “What Fiscal Policy is Effective at Zero Interest Rates?” *NBER Macroeconomics Annual 2010*, Volume 25.

<sup>34</sup> Arjo Klammer, *Conversations with Economists* (Lanham, MD: Rowman & Littlefield, 1984).

<sup>35</sup> These departments of economics are not monolithically divided along fresh- versus-salt-water lines, and mostly comprise economists with diverse views.

## “Fresh-Water” Macroeconomics

Fresh-water economists are typically skeptical of the government’s ability to improve economic performance. Fresh-water economists, critical of Keynesian theories, view recessions not as reflections of market instability, but as the result of the emergence of new economic structures or the responses to external shocks. This school of thought, often called the New Classical Macroeconomics, argues that market forces naturally balance labor supply and demand and lead to economic efficiency. According to some economists, the actions by the private sector are more effective and efficient at changing market forces than the government’s response, which allows for a faster rebound from downward-trending economic forces. During the 1970s some Keynesian economists had argued that demand management policies could exploit an observed inverse relationship between unemployment rates and inflation, known as the Phillips curve. Policymakers who tried to reduce unemployment by tolerating higher inflation rates saw the Phillips curve break down, as slow economic growth and persistent inflation rates—termed “stagflation”—led to wide unhappiness with macroeconomic conditions.

While the joint appearance of inflation and high unemployment confounded many Keynesian economists, research in New Classical Macroeconomics argued that firms and households simply learned to anticipate inflation and developed inflationary expectations. Thus, the microeconomic responses of families and companies would counteract efforts of macroeconomic policymakers to exploit the Phillips curve relationship, which then resulted in high inflation rates without any persistent gains in employment levels. Prominent New Classical Macroeconomists argued, therefore, that monetary policy authorities should stick to simple, predictable rules.<sup>36</sup>

New Classical Macroeconomists also argued that microeconomic decisions of households and firms could undermine the effectiveness of fiscal policy. Further they believe in the flexibility of prices and wages throughout the economy. The Ricardian Equivalence view, as noted above, assumes households respond to tax cuts by saving funds to finance subsequent tax increases. This view, which assumes households can easily borrow and lend to shift buying power across time periods, has had mixed empirical support.

New Classical Macroeconomics research typically assumes that individuals have strong forecasting abilities. Rational expectations, a central tenet of New Classical Macroeconomics, presumes that firms and families are not systematically wrong when they form their economic plans. In particular, the rational expectations assumption implies that households and businesses foresee the consequences of changes in government policies and act in their own best interests in response, although economic agents may make mistakes because of changing circumstances and uncertainty. In many economic models, the combination of rational expectations with other technical assumptions, such as no-bubble conditions, often results in strong efficiency properties—meaning that resources are not wasted, productive equipment is not idle, costs are minimized, and firms produce a mix of goods that match what consumers want.<sup>37</sup> The New Classical Macroeconomics critique of Keynesian demand management policies has relied on models that combine neoclassical micro-foundations for macroeconomics (meaning that households make consumption decisions to maximize their long-term well-being) and the

<sup>36</sup> Finn E. Kydland and Edward C. Prescott, “Rules Rather than Discretion: The Inconsistency of Optimal Plans,” *The Journal of Political Economy*, vol. 85, no. 3 (June 1977), pp. 473-492.

<sup>37</sup> These Ramsey-type models, in which infinitely lived households choose consumption paths over an infinite time horizon, incorporate other conditions and assumptions as well.

assumption that economic agents are foresighted, even when faced with complex dynamic decisions.

## **“Salt-Water” Macroeconomics**

Salt-water economists tend to see recessions as evidence of economic instability that governments can mitigate to allow steadier economic growth.<sup>38</sup> More recent “salt-water” research sets older Keynesian theories upon more modern foundations, while emphasizing that the structure of labor markets may create wage rigidities. For example, the price of soybeans may change by the millisecond, but the wages of employees do not. Wage rigidities may lead to involuntary unemployment or excess capacity during economic downturns, and thus provide a role for traditional Keynesian demand management.<sup>39</sup>

Salt-water economists contend that individuals and firms, for various reasons, may have trouble lifting the economy out of a recession.<sup>40</sup> Federal fiscal policy actions and the Federal Reserve monetary policies, in this view, can help stabilize the economy and mitigate recessions. The Great Depression of the 1930s, according to salt-water economists, demonstrates that the American economy could remain persistently below its potential despite individual efforts by households and firms. If households are unwilling to spend because they fear continuing economic weakness, then firms may cut investment in the face of weak demand, generating a self-enforcing recessionary cycle. Falling prices, rather than adjusting the balance between supply and demand, may give households further reason to delay consumption. Government fiscal stimulus, salt-water economists claim, can restore market balance by temporarily replacing private consumption and investment with government outlays, thus providing the demand to help push the economy back to its full potential. Deficit spending can be used to increase aggregate demand in the economy, causing output and prices to increase. When the economy is running below its potential level of output, expansionary fiscal policies such as deficits stimulate economic activity, bringing idle economic capacity back into use and pushing the economy back toward its full potential.

If the economy is running near its full potential, expansionary fiscal policies can lead to inflation, may displace private economic activity, and could cause large trade deficits. Running government surpluses reduces aggregate demand in the economy and helps restrain inflation.

## **Dynamic Statistical Agnosticism and Macroeconomics Engineering**

While fresh- and salt-water research has increased the technical sophistication of academic macroeconomic models, some contend that more atheoretical approaches that focus on the statistical dynamics of large economies may be more useful for policy analysis.<sup>41</sup> Moreover, models used by central banks and commercial economic forecasters often have a more pragmatic

<sup>38</sup> Peter T. Kilborn, “‘Fresh Water’ Economists Gain,” *The New York Times*, July 23, 1988.

<sup>39</sup> For a critique of fresh-water macroeconomics, see Robert J. Gordon, “Is Modern Macro or 1978-era Macro More Relevant to the Understanding of the Current Economic Crisis?” Northwestern University working paper, September 12, 2009, available at [http://faculty-web.at.northwestern.edu/economics/gordon/GRU\\_Combined\\_090909.pdf](http://faculty-web.at.northwestern.edu/economics/gordon/GRU_Combined_090909.pdf).

<sup>40</sup> William White, “Modern Macroeconomics Is On The Wrong Track” *Finance & Development*, December 2009.

<sup>41</sup> Christopher A. Sims, “Policy Analysis with Econometric Models,” *Brookings Papers on Economic Activity*, vol. 1 (1982), pp. 107-164. For a review of recent research that combines some limited assumptions about the structure of the economy with dynamic statistical approaches (structural autoregressive vector regressions), see Alan J. Auerbach and William G. Gale, “Activist Fiscal Policy to Stabilize Economic Activity,” working paper, September 29, 2009; Robert E. Hall, “By How Much Does GDP Rise If the Government Buys More Output?” *Brookings Papers on Economic Activity*, Fall 2009, pp. 183-249.

foundation than leading academic macroeconomic models. Such models can predict effects of a policy change, such as inflation, when given an accurate assessment of current conditions. Some see such applied economic models as a form of engineering, in contrast to the more scientific concerns of academic researchers.<sup>42</sup> While applied models used by the Federal Reserve, CBO, private forecasters, and major central banks, which generally rest on Keynesian foundations, may work reasonably well in normal circumstances, they might function less well in unusual circumstances where microeconomic responses of households and firms diverge from Keynesian assumptions.<sup>43</sup> New Classical models, while highly influential in academic research, have not yet achieved wide use in forecasting and policy analysis.<sup>44</sup>

## How Effective Has Economic Stimulus Been?

ARRA was passed in February 2009 with the aim of stimulating economic growth by increasing government spending on certain programs and by cutting some taxes. The effectiveness of economic stimulus is often measured using estimates of multipliers, which calculate the cumulative effect of an extra dollar of government spending on overall economic activity over some time period.<sup>45</sup> According to CBO estimates, some recent programs have increased GDP by as much as \$2.50 per dollar of stimulus spending, while others may have increased growth by as little as 20 cents per stimulus dollar. When tax breaks or transfer payments are saved rather than spent, multipliers are smaller.<sup>46</sup> Some economists would argue that during times of a liquidity trap, when monetary policy loses potency, spending multipliers are higher. Households that are liquidity constrained are more likely to spend one-time cash payments, yielding a high spending multiplier. For households that are not liquidity constrained, one-time payments are more likely to be saved, rather than spent. The expenditure multiplier is higher when the economy is operating below full potential.<sup>47</sup> When the economy operates at its full potential, government spending is more likely to crowd out private consumption.

Economic research on the magnitude of multipliers has been an active area of research, and has generated a broad range of results.<sup>48</sup> As noted above, the effectiveness of economic stimulus responses may depend on whether the economy is at the zero lower bound on interest rates, the type of spending or tax cut, and the extent of excess productive capacity. Economic downturns caused by financial crises may also differ significantly from downturns caused by restrictive monetary policies. Estimation of multiplier effects in the United States is typically strongly colored by the ramp-up of military production in World War II and the demobilization in 1946.

<sup>42</sup> N. Gregory Mankiw, "The Macroeconomist as Scientist and Engineer," working paper, Harvard University, May 2006, available at [http://www.economics.harvard.edu/files/faculty/40\\_Macroeconomist\\_as\\_Scientist.pdf](http://www.economics.harvard.edu/files/faculty/40_Macroeconomist_as_Scientist.pdf). Mankiw was President George W. Bush's Chairman of the Council of Economic Advisors and is currently a professor of economics at Harvard University.

<sup>43</sup> Some applied revenue estimation models are Ramsey-type rather than Keynesian models.

<sup>44</sup> Mankiw, op. cit.

<sup>45</sup> Robert J. Barro and Charles J. Redlick, "Stimulus Spending Doesn't Work," *The Wall Street Journal*, October 1, 2009.

<sup>46</sup> U.S. Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output as of September 2009*, November 2009.

<sup>47</sup> John F. Cogan, Tobias Cwik, John B. Taylor, and Volker Wieland, "New Keynesian versus Old Keynesian Government Spending Multipliers," February 2009.

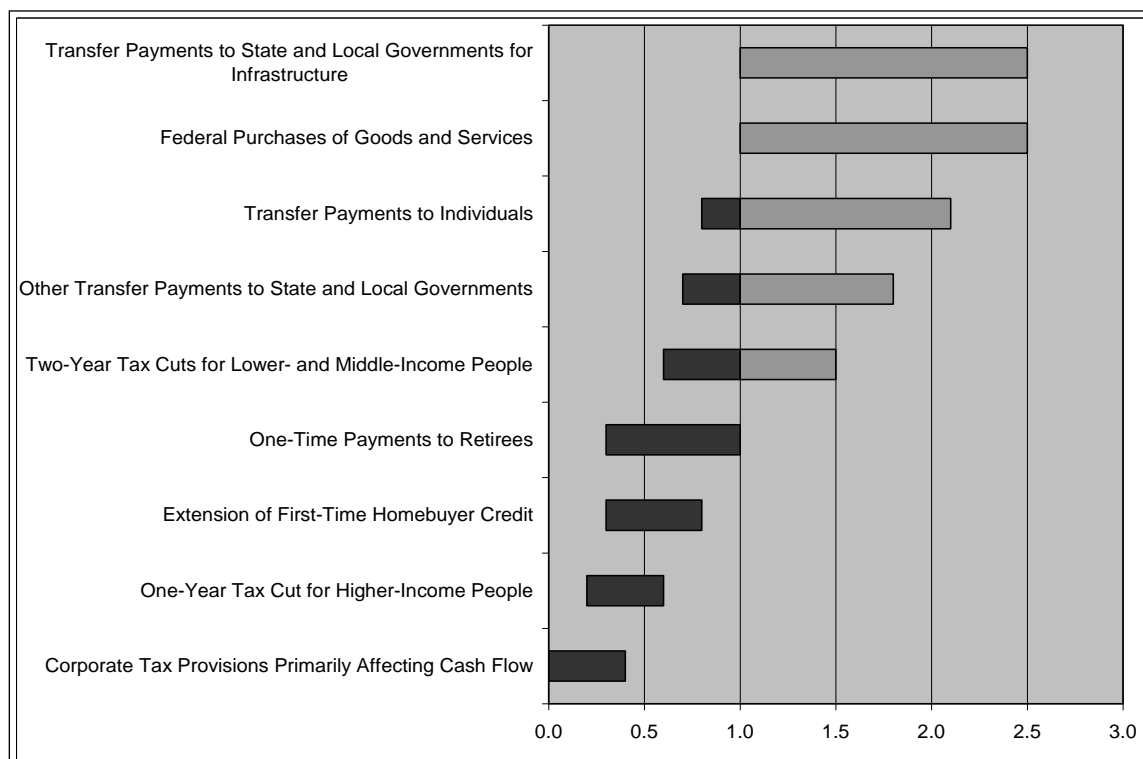
<sup>48</sup> For surveys of results, see Alan J. Auerbach, William G. Gale, and Benjamin H. Harris, "Activist Fiscal Policy," working paper, University of California–Berkeley, August 2010; Antonio Spilimbergo, Steve Symansky, and Martin Schindler, "Fiscal Multipliers," Staff Position Note 09/11, International Monetary Fund Research Department, May 20, 2009, available at <http://www.imf.org/external/pubs/ft/spn/2009/spn0911.pdf>.

Furthermore, the difficulty of disentangling cause and effect for federal fiscal policy and economic conditions presents deep statistical challenges for researchers.

**Figure 1** shows CBO estimates of multipliers associated with government spending programs funded by ARRA issued in November 2009. Direct purchases by the government or transfer payments to state and local governments and to individuals generated the highest multipliers, while one-time payments had a relatively low multiplier in comparison to other forms of government spending. The multiplier for payments to retirees is even weaker because members of older generations may not face financial constraints such as those facing younger generations who often have higher levels of debt. Corporate tax provisions generated the lowest multiplier. The extension of the First-Time Homebuyer Credit also had a very weak multiplier effect. Some economists contend that these purchases came at the expense of future purchases, where consumers took advantage of tax credits by acting now instead of opting to delay consumption.<sup>49</sup>

**Figure 1. Estimated Multipliers of the American Recovery and Reinvestment Act**

Range of Estimated Government Multiplier Effects of Selected Programs



**Source:** Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output as of September 2009*, available at <http://www.cbo.gov/ftpdocs/106xx/doc10682/11-30-ARRA.pdf>.

**Notes:** Includes projections by CBO or JCT as having the total budget \$5 billion or more over the 2009-2019 period. Certain provisions with lower total costs were included if the costs in the 2009-2011 period were large. Some elements have different multipliers, by CBO's estimates; in those cases the elements are listed with the multiplier used for the majority of the 2009-2019 budgetary cost. Major provisions as identified above are provided by the JCT, *Estimated Budget Effects of the Revenue Provisions Contained in the Conference Agreement for H.R. 1*, JCX-19-09 (February 12, 2009), available at <http://www.jct.gov/x-19-09.pdf>.

<sup>49</sup> U.S. Congressional Budget Office, *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output as of September 2009*, November 2009, available at <http://www.cbo.gov/ftpdocs/106xx/doc10682/11-30-ARRA.pdf>.



The output multiplier is the cumulative impact on real gross domestic product over several quarters for each dollar of spending or reduction in tax revenues.

In August 2010, CBO issued a subsequent analysis of the effects of ARRA on economic activity. CBO estimated that ARRA raised real GDP by 1.7% to 4.7% and lowered the national unemployment rate by 0.7% to 1.8% in the second quarter of calendar year 2010 relative to what would have occurred otherwise.<sup>50</sup> Zandi and Blinder analyzed the effects of economic stimulus and federal financial interventions, and estimated that “without the government’s response, GDP in 2010 would be about 11.5% lower, payroll employment would be less by some 8.5 million jobs, and the nation would now be experiencing deflation.”<sup>51</sup> Zandi and Blinder also estimated the effects of federal financial interventions and economic stimulus separately. They concluded that each had important effects on restoring economic growth, and that those responses were also mutually self-reinforcing.

## Other Considerations

Using deficit finance to expand government spending and federal aid during economic downturns is only sustainable if governments run surpluses during economic expansions to repay debt or accumulate reserves, or stabilize the debt to GDP ratio. Running surpluses during normal economic conditions may strengthen a government’s capacity to manage its economy, not only by reducing public debt levels, but also by enhancing its reputation for fiscal prudence, which may widen its policy options in the event of a subsequent downturn.<sup>52</sup> Critics of deficit finance and active fiscal policy, however, argue that policy makers are more willing to increase government spending when economic growth slows than to cut spending when growth accelerates.<sup>53</sup>

In addition, designing fiscal policy is a slow and deliberative process, whereas economic downturns can emerge suddenly and are difficult to predict. Because economic shocks affect spending patterns with substantial lags, economic conditions may have changed significantly before new federal spending actually reaches the public. Few economists believe that large changes in fiscal policy designed to counterbalance short-term economic downturns can be timed precisely, although many economists believe fiscal policy is an important tool during prolonged periods of slow or negative growth. Effects of severe economic downturns, however, often persist so that timing issues become less important. In particular, unemployment rates, widely considered a lagging economic indicator, may remain high well after other signs of economic growth appear.

Even though government spending can stimulate economic growth when private consumption is weak, excessive government spending can hinder growth. When the costs of financing government spending exceed its benefits, economic well-being is reduced. This can occur in one

<sup>50</sup> CBO, Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output From April 2010 through June 2010, August 2010, available at <http://www.cbo.gov/ftpdocs/117xx/doc11706/08-24-ARRA.pdf>.

<sup>51</sup> Alan S. Blinder and Mark Zandi, “How the Great Recession Was Brought to an End,” occasional paper, Moody’s Analytics/Economy.com, July 27, 2010, available at <http://www.economy.com/mark-zandi/documents/End-of-Great-Recession.pdf>.

<sup>52</sup> This often referred to as creating “policy-space,” or more colloquially as “reloading the fiscal cannon.” See Olivier Blanchard, Giovanni Dell’Ariccia and Paolo Mauro, “Rethinking Macroeconomic Policy,” *IMF Staff Position Note*, SPN/10/03, 12 February 2010.

<sup>53</sup> Milton Friedman, *Capitalism and Freedom* (Chicago: Univ. of Chicago Press, 1962), pp. 75-84.



of two ways. First, it can raise interest rates and crowd out public consumption. Second, it can fail to improve GDP and generate higher levels of debt than before.<sup>54</sup>

While government spending can stimulate economic growth when private consumption is weak, excessive government spending can hinder growth. When the cost of financing government spending exceeds its benefits, economic well-being is reduced. While some government programs provide benefits that private markets cannot easily supply, taxes that fund government operations can distort economic incentives. Other government programs might fail to generate benefits that balance their costs to taxpayers. Thus, reducing some types of government spending might lead to higher levels of economic growth. One study using a panel of Organization for Economic Co-operation and Development (OECD) countries found government spending had sizeable negative effects on profits and business investments.<sup>55</sup> The size of the government sector in the United States is much smaller than most large OECD member states. A 2010 International Monetary Fund (IMF) report concluded that an increase in government debt equal to 10% of GDP would slow economic growth by 0.2% per year, although that effect appeared stronger for developing countries than for advanced economies. Debt increases for countries with medium to high levels of existing debt appeared to retard growth more than for equivalent increases for countries with low initial debt levels.<sup>56</sup>

The effectiveness of aggressive fiscal policies, such as running deficits, also depends on the perception of investors that a government is solvent. If investors who might buy government bonds view a government's long-term fiscal situation as unsustainable and doubt that the government has the financial or political means to address its fiscal situation, then increased deficit spending may well lead to large interest rate increases that may overwhelm any positive stimulative effect.

## Political Explanations

The political business cycle literature provides a theory of economic fluctuations based on politicians' desire to maximize their chances of reelection. Early versions of political business cycle models presumed politicians could fool myopic voters by pumping up government spending before elections.<sup>57</sup> More sophisticated versions assume voters are rational and not myopic, but are unable to distinguish between sustainable prosperity based on policy and administrative competence from temporary prosperity based on deficit spending.<sup>58</sup> Drazen reviewed the literature and found strong evidence that voters react to economic conditions, but weak evidence that macroeconomic policy is manipulated to sway elections.<sup>59</sup>

The alternation of partisan control of government may explain a persistent tendency towards deficit spending. Several articles in the economics of politics literature, such as Alesina and

<sup>54</sup> CRS Report R40770, *Economic Effects of a Budget Deficit Exceeding \$1 Trillion*, by Marc Labonte.

<sup>55</sup> Alberto Alesina, Silvia Ardagna, Roberto Perotti, and Fabio Schiantarelli, "Fiscal Policy, Profits, and Investment," *American Economic Review*, vol. 92, no. 3 (June 2002), pp. 571-589.

<sup>56</sup> International Monetary Fund, Fiscal Affairs Department, *Navigating the Fiscal Challenges Ahead*, Fiscal Monitor, May 14, 2010, available at <http://www.imf.org/external/pubs/ft/fm/2010/fm1001.pdf>.

<sup>57</sup> William D. Nordhaus, "The Political Business Cycle," *Review of Economic Studies*, vol. 42, no. 2 (April 1975), pp. 169-190.

<sup>58</sup> Kenneth Rogoff, "Equilibrium Political Business Cycles," *American Economic Review*, vol. 80, no.1 (1990), pp. 21-36.

<sup>59</sup> Allan Drazen, "The Political Business Cycle After 25 Years," *NBER Macroeconomics Annual*, vol. 15 (2000), pp. 75-117.

Tabellini or Persson and Svensson, contend the government of the day can constrain its successors' choices by running budget deficits.<sup>60</sup> If a successor government has different spending priorities, the current government may be tempted to influence future fiscal policies by using debt to change the incentives and constraints facing future decision makers. Such policies are highly unlikely to be as economically efficient as a more consistent fiscal policy. Some argue that budget enforcement legislation, such as pay-as-you-go requirements and discretionary budget caps, may help provide political underpinnings to a more consistent fiscal policy. Some budget analysts contend that mechanisms created by the 1990 Budget Enforcement Act (P.L. 101-508) led to more sustainable fiscal policies. European Union fiscal rules on public deficits and debt-to-GDP ratios, however, may not have led to sustainable fiscal policies in some countries.<sup>61</sup>

## Intergenerational Transfers

Political considerations may also affect how the benefits and costs of government programs are allocated among generations. Political leaders might seek to please their current constituents by increasing government spending; however, this shifts fiscal burdens onto unborn taxpayers and younger cohorts, whose lower voting participation rates may leave them with a weaker voice in policy discussions. This will hold true because individuals will favor fiscal policy that increases their lifetime wealth.<sup>62</sup> Leaving future taxpayers to pay for higher spending today simply transfers the burden to future generations as opposed to focusing on deficit reduction or actual solutions to higher costs.<sup>63</sup> Public debt then becomes a tool used to transfer wealth between generations.

One explanation of persistent deficits is that future generations do not vote, and young citizens usually vote less often than older citizens. Generations now alive face a temptation to pass on the costs of programs that benefit themselves to following generations that have no say. Some shifting of resources to older generations is seen by some as justified on the basis of equity. To the extent that technological change leads to greater prosperity over time, future generations will have access to higher standards of living. To the extent that population growth increases the size of the economy, the burden of financing pay-as-you-go retirement systems is reduced. If some of those gains are shifted from younger to older generations, then incomes and levels of well-being would be more equal among generations. Furthermore, in this view, a fiscal policy that shifts some resources from younger to older generations can raise living standards of all following generations by transferring a portion of the benefits of future economic growth into the present.

A simple example illustrates this possibility.<sup>64</sup> Consider an economy with a fixed population divided among age-specific cohorts. For the sake of simplicity, suppose individuals live 75 years. Also assume that income of each cohort is the same, arrives from a source outside the economy,

<sup>60</sup> Alberto Alesina and Guido Tabellini, "A Positive Theory of Fiscal Deficits and Government Debt," *Review of Economic Studies*, vol. 57, July 1990, pp. 403-414; Torsten Persson and Lars E. O. Svensson, "Why a Stubborn Conservative Would Run a Deficit: Policy with Time-Inconsistent Preferences," *Quarterly Journal of Economics*, vol. 104 (May 1989), pp. 325-345.

<sup>61</sup> The European Union's Growth and Stability Pact was created as part of negotiations leading to the 1992 Maastricht Treaty. See Anthony Annett, Jörg Decressin, and Michael Deppler, "Reforming the Stability and Growth Pact," IMF Discussion Paper, February 2005, available at <http://www.imf.org/external/pubs/ft/pdp/2005/pdp02.pdf>.

<sup>62</sup> Alex Cukierman and Allan H. Meltzer, "A Political Theory of Government Debt and Deficits in a Neo-Ricardian Framework," *American Economic Review*, vol. 79, no. 4 (September 1989).

<sup>63</sup> Andrew Samwick, Dartmouth College, "How to Advise on Fiscal Policy," *Vox Baby*, July 6, 2007, available at <http://voxbaby.blogspot.com/2007/07/how-to-advise-on-fiscal-policy.html>.

<sup>64</sup> This example is closely related to the overlapping generations model. For a comprehensive exposition and analysis see David Gale, "Pure Exchange Equilibrium of Dynamic Economic Models," *Journal of Economic Theory*, vol. 5 (1973), pp. 12-36.

and grows 3% per year. Consider a fiscal policy that causes each age-specific cohort (except the oldest) to transfer 2% of its income to the one-year-older cohort. All transfers, except for the oldest and youngest cohorts, cancel out. The youngest cohort gets 98% of its pre-transfer income, and the oldest gets 102% of its pre-transfer income. Although the loss to the youngest cohort and gain to the oldest cohort balance out for each year, each individual born after the start of the plan gains because of economic growth (so long as the economy's interest rate is below 3% per year). With a 3% growth rate over 74 years, income increases by 891%. Therefore, the gain in buying power per dollar of income in present value terms for a cohort born after the start of the policy is

$$1.02 * \left( \frac{1.03}{1+r} \right)^{74} - (.98)$$

where  $r$  is the real interest rate. So long as the real interest rate is less than 3%, which is true for long-term historical real rates of return for U.S. Treasury bills, the policy of shifting resources to older generations makes all generations better off.<sup>65</sup> This highly simplified example shares the same basic structure as pay-as-you-go social insurance programs, in which young workers pay contributions that are more or less immediately used to pay benefits to older retirees.<sup>66</sup>

Raising current standards of living by shifting resources from younger to older generations has its limits. The example above relies on the assumption that the policy continues indefinitely into the future. With a finite ending point this policy would be unsustainable because some young cohorts near that end point would be made worse off and would be unwilling to give up resources.

The current fiscal policies' paths of entitlement spending of the United States imply that large transfers will be made to the baby-boom generation from younger generations.<sup>67</sup> Computations by Auerbach, Gokhale, and Kotlikoff indicate that future generations will pay much more in taxes than they will receive from the government.<sup>68</sup> In 2000, Gokhale and others estimated that a newborn male in 1998 would pay \$142,500 more in taxes than what he would receive from the government; the corresponding estimate for a newborn female was \$71,300.<sup>69</sup> Due to increased federal deficits, the introduction of Medicare Part D, and falling tax revenues due to the recent economic recession, those estimates would be higher for current newborns. Despite the projected magnitude of these intergenerational transfers, younger generations might not be worse off than their parents if the economy grew at a sufficiently swift pace.

These generational transfers are largely driven by the growth in the number of beneficiaries of entitlement programs relative to the work force, as well as by rapid increases in health care costs. The possibility that some future generation may eliminate fiscal policies that it perceives will lower its standard of living introduces political risk into social insurance programs funded by a pay-as-you-go mechanism.<sup>70</sup> If a generation anticipates that a younger generation will stop

<sup>65</sup> Goetzmann and Ibbotson found that the real rate of return on U.S. Treasury bills from 1924-2004 was less than 1% per year. See Table II in William N. Goetzmann and Roger G. Ibbotson, "History and the Equity Risk Premium," Yale School of Management working paper, October 2005, available at <http://econ.ucsb.edu/conferences/equity05/papers/Goetzmann.pdf>.

<sup>66</sup> For a defense of pay-as-you-go financing, see Peter Diamond, "Social Security," *American Economic Review*, vol. 94, no.1 (March 2004), pp. 1-24.

<sup>67</sup> Laurence J. Kotlikoff and Scott Burns, *The Coming Generational Storm* (Cambridge, Mass.: MIT Press, 2004).

<sup>68</sup> Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff, "The 1995 Budget and Health Care Reform: A Generational Perspective," *Economic Review*, Federal Reserve Bank of Cleveland, issue Q1, 1994, pp. 20-30.

<sup>69</sup> Jagadeesh Gokhale, Benjamin Page, Joan Potter, and John Sturrock, "Generational Accounts for the United States: An Update," CBO Technical Paper Series, 2000.

<sup>70</sup> John B. Shoven and Sita N. Slavov, "Political Risk versus Market Risk in Social Security," April 2006, NBER

contributing to a pay-as-you-go social insurance program, then it may decide to end the program itself. A generation whose descendants are unwilling to finance its benefits would have little to gain, apart from altruistic impulses, by continuing its contributions.<sup>71</sup>

## The Long-Term Budget Outlook

While the recent economic recession and past policy choices have led to large deficits in FY2008 and FY2009, the divergence between government revenues and expenditures is projected to grow. The “fiscal gap,” the estimated magnitude of revenue increases or spending decreases necessary to stabilize the ratio of public debt to GDP over a given time horizon, is one measure of that divergence.<sup>72</sup> According to CBO extended baseline projections, the “fiscal gap” between government revenues and spending over the next 25 years may be as high as 2.1% of GDP or a total of an additional \$7.1 trillion in debt over the next decade.<sup>73</sup> CBO’s alternative fiscal scenario, which many analysts believe gives a more realistic approximation of future policy, puts the 25-year fiscal gap even higher at 5.4% of GDP.<sup>74</sup> Over longer horizons, the fiscal gap is projected to become wider still. The CBO extended baseline projects the 75-year fiscal gap at 3.2% of GDP, while the alternative scenario puts it at 8.1% of GDP.<sup>75</sup> The growing fiscal gap signals that younger and unborn generations may bear larger fiscal burdens, which could hinder their ability to achieve a higher standard of living than their parents. Without significant changes in fiscal policy, future generations will face the need to adjust tax rates, or government spending levels, or both, in major ways in order to avoid default.<sup>76</sup>

## Costs of Financing Deficits

A government that runs deficits and is unwilling to raise taxes or cut spending faces three choices. First, domestic borrowing can be increased at the cost of crowding out domestic investment. Second, a government can borrow from foreign investors and governments. Borrowing from the rest of the world prevents deficits from crowding out investment. That is, foreign investors can provide financial resources now in exchange for future interest payments and profits. As foreign investors accumulate larger portfolios of stocks, bonds, and other assets, the flow of interest payments, dividends, and repatriated profits abroad increases as well. Third, a central government can print money to reduce the real value of debt denominated in domestic currency.

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Working Paper No. W12135, available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=896208](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=896208).

<sup>71</sup> Altruistic impulses play an important role in many questions concerning intergenerational transfers. For an overview of recent research on the subject, see L.-A. Gérard-Varet, S.-C. Kolm and J. Mercier-Ythier (eds.), *Handbook of the Economics of Giving, Reciprocity and Altruism*, vol. 1, (Amsterdam: North Holland, 2006).

<sup>72</sup> For a discussion of the relationship between the fiscal gap, generational accounting, accrual accounting, and other ways of accounting for government, see Alan J. Auerbach, William G. Gale, Peter R. Orszag, and Samara Potter, “Budget Blues: The Fiscal Outlook and Options for Reform,” in Henry Aaron, James Lindsay, and Pietro Nivola, eds., *Agenda for the Nation* (Washington: Brookings Institution, 2003), pp. 109-143.

<sup>73</sup> U.S. Congressional Budget Office, *The Budget and Economic Outlook, An Update*, August 2009, available at <http://www.cbo.gov/ftpdocs/105xx/doc10521/08-25-BudgetUpdate.pdf>.

<sup>74</sup> The CBO baseline assumes that all expiring tax cuts will not be extended and that discretionary spending remains at its current level. The alternative fiscal scenario extends expiring tax cuts and uses Congress’s past behavior as an indicator of future actions to predict future spending levels.

<sup>75</sup> U.S. Congressional Budget Office, *Long Term Budget Outlook*, June 2009, available at <http://www.cbo.gov/ftpdocs/102xx/doc10297/06-25-LTBO.pdf>.

<sup>76</sup> Alan J. Auerbach and William G. Gale, “An Update on the Economic and Fiscal Crises: 2009 and Beyond,” working paper, September 2009.

All three options have unpleasant consequences. While fiscal imbalances may gradually build over time, the consequences of unsustainable fiscal policies may arrive suddenly. Simple supply and demand theory implies that a smaller supply of savings for private investment will lead to higher interest rates and lower growth in private capital stocks. Lower stocks of private capital threaten economic growth, and slower economic growth translates into lower average living standards in the future. Borrowing from the rest of the world permits higher levels of investment and faster growth at the cost of sending a higher fraction of earnings abroad. If foreigners lend capital by purchasing stocks and bonds rather than by building auto plants, for example, they may decide suddenly someday to take their investments elsewhere. This could strain domestic and international financial systems, thus constricting firms' and households' access to capital.

Foreign investment in the United States plays an important role between balancing domestic supply and demand of capital. For instance, China held 22.8% of the United States' debt as of September 2009.<sup>77</sup> The financial crisis and economic downturn, however, have sharply reduced the demand by foreign investors.<sup>78</sup> As the share of the federal debt held by foreign entities has grown, so has concern about possible consequences. While the risk of a sudden or coordinated sale of U.S. Treasury securities is low, the large foreign holdings of U.S. debt may introduce new contingencies that could complicate financial and foreign policy.

Finally, inflation caused by printing money distorts the flow of information generated by the price system and disrupts financial markets. Investors, who wish to avoid capital losses in real terms, typically demand higher nominal interest rates when they see signs of inflation. During the 1970s, the real value of the federal debt fell sharply as inflation accelerated. While inflation in the past has helped ease the burden of federal debt, bringing inflation under control can be costly. Many economists believe that the restrictive monetary policies needed to squeeze rapid inflation out of an economy would require substantial economic disruption, at least in the short run. Moreover, in the current fiscal environment, inflation might not be an effective means of reducing the value of federal debt for two reasons. First, some Treasury securities are now indexed for inflation. Second, much of the fiscal imbalance facing the federal government is linked to the implicit cost of funding scheduled benefits for large entitlement programs such as Medicare and Social Security, rather than accumulated federal debt.

Reducing government deficits can improve economic performance in at least three ways. First, paying off government debt increases the supply of investment funds available for domestic investment. Second, paying off government debt held by foreign governments or investors reduces the amount of interest payments going abroad. Alternatively, paying off debt held by domestic investors gives them the opportunity to rebalance their portfolios by buying foreign assets, which offsets some of the flow of dividends and profits going abroad, or by buying domestic assets that otherwise would have been bought by foreign investors. Third, scaling down the federal debt decreases the temptation to reduce its real value by printing money, lessening the possibility of a major acceleration in inflation. Finally, most economists believe reducing government borrowing lowers interest rates, which in turn encourages investment and growth.

## Conclusion

Some economists disagree on the effects of government's ability to smooth economic recessions. The ability of governments to run deficits can help avoid short-term fiscal crises caused by

<sup>77</sup> U.S. Treasury, *Major Foreign Holders of Treasury Securities*, November 17, 2009, available at <http://www.ustreas.gov/tic/mfh.txt>.

<sup>78</sup> CRS Report RL32462, *Foreign Investment in U.S. Securities*, by James K. Jackson.

adverse economic shocks. Long-term deficits can be used to allow older generations to enjoy some of the anticipated fruits of future economic growth. A government can sustain a debt indefinitely, so long as the size of the debt relative to the size of the economy does not grow without bound. Maintaining a large debt requires large interest payments and can retard economic growth. Thus deficits can serve as a useful tool of economic management in the short run, but also can cause substantial economic damage to the economy over the long term.

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